

Abstract

A system and method for performing a curve fit on a plurality of data points. In an initial phase, a subset P_{\max} of the plurality of points which represents an optimal curve is determined. This phase is based on a statistical model which dictates that after trying at most N_{\min} random curves, each connecting a randomly selected two or more points from the input set, one of the curves will pass within a specified radius of the subset P_{\max} of the input points. The subset P_{\max} may then be used in the second phase of the method, where a refined curve fit is made by iteratively culling outliers from the subset P_{\max} with respect to a succession of optimal curves fit to the modified subset P_{\max} at each iteration. The refined curve fit generates a refined curve, which may be output along with a final culled subset K_{final} of P_{\max} .